

# MISSOURI

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## resources

Fall 2005 • Volume 22 • Number 3



## Director's Comment

**F**iguring out what Missourians want or how they feel isn't all that hard. Just ask them. Now approaching my seventh month as your DNR director, I have some very solid feedback from all across the state. In fact, I have a pretty steady flow coming in now. That's how it should be.

Individuals, land owners, farmers, business owners small and large, local government officials and politicians. Oh, did I leave out lawyers? Yes, free legal opinions are streaming in from all sources, and on all topics.

That's how it should be. The people of Missouri want to know that the state agency charged with keeping their environment safe and clean can hear them. That was one of my most important goals when I accepted this position. It's Job One. I can't do it alone, that's for sure. The dedicated staff that work for me, and for you, have all accepted the challenge to "open their ears." I realize that the minute we stop listening, you'll stop talking.

Of course, the second part of the equation is how we act on your comments. I don't believe in ordering concrete if I don't plan to pour a slab. But to continue that analogy, I can't pour the slab without all the dimensions. We have to hear all sides, strike a balance and find a way to fund it, hopefully using the financial resources we have. I know it seems like government moves at a snail's pace, but moving the wrong way not only wastes time but more of those financial resources. Like George C. Scott said in the movie "Patton": "I hate to pay for the same real estate twice." Everybody's resources are limited. Yours, mine, DNR's, taxpayers that want improved protection and businesses that want us to lighten up a little.

It reminds me of my four-and-a-half years in the Peace Corps. Think, if you will for a minute, just how little the environment means to those whose daily lives consist of scratching up enough to feed and clothe themselves and their family. Not just around payday – most don't even know what that

is – but every single day of their all-too-short lives. Uneducated, poor, hungry, drinking and bathing in putrid water; who can blame them if they don't have a strong understanding about uncontrolled urban growth or noxious tailpipe emissions.

But you can blame us. We know. We remember when we could swim in any stream, eat any fish, buy gas for 30 cents a gallon and laugh at the idea of paying for a bottle of water. Times have changed. We have to change, too. Yes, our financial resources are limited. So are our natural resources. Whenever the age-old debate comes up about how can environmental protection and economic growth co-exist, I ask myself, "How can they not?" They are not mutually exclusive. They are inexorably attached. It's all about balance.

Speaking of balance, I'm beginning to think I would have made a great umpire or referee. They say when you are catching it from both sides, you must be doing a good job. Well, I won't say I'm doing a good job yet, but in my travels and at public meetings across Missouri, I am most definitely catching it from all sides. As long as that continues, Missourians will know that their DNR is listening.

That's how it should be.



Doyle Childers  
Missouri Department of Natural Resources

## MISSOURI resources

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### Mission Statement

The mission of the Department of Natural Resources is to preserve, protect, restore and enhance Missouri's natural, cultural and energy resources and to inspire their enjoyment and responsible use for present and future generations.

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**FRONT COVER:** A fall sunset casts its glow across a Missouri lake.

**BACK COVER:** Fallen leaves provide a scenic carpet in the woodlands of Missouri.

Cover photos by Scott Myers.



A photograph of a river with a white water tower on a hill in the background. The title 'Making Clear Decisions About Source Water Protection' is overlaid on the image in a large, bold, white font with a slight shadow. Below the title, the author 'by Don Scott' and photographer 'photos by Scott Myers' are listed in a smaller, white font.

# Making Clear Decisions About Source Water Protection

by Don Scott  
photos by Scott Myers

Is the water coming out of your tap provided by the city you live in, a rural water supply district, or your own private well? If you are buying water from a public water system, do you know where it gets its water?

Approximately 4 million Missourians get their drinking water from a public water system. The Mis-

souri Department of Natural Resources and your local public water supplier work together to ensure your drinking water remains safe, reliable and affordable. You also can play a significant role in increasing the safety and reducing the cost of your drinking water. To explain how, let's first consider the source of your drinking water in more detail.

Groundwater is an important resource in Missouri. One-and-one-half million people that use public water systems drink groundwater. In the Ozark region of Missouri, it is quite easy to obtain water from a well that is suitable to drink with little or no treatment. In northern and western Missouri it can be more difficult to find good well water. The geology of these areas is such that water moves slowly through the bedrock. Water can be difficult to pump in large quantities, and because it has resided in the ground so long, it contains dissolved minerals making the water undesirable.

In areas where high-quality groundwater is not available and where large populations demand more water than can be pumped from groundwater aquifers, surface water is used. Surface water drawn from lakes and rivers provides 2.5 million Missourians with their source of drinking water.

In the case of groundwater, water seeping into the ground from the surface finds its way to the aquifer over time. Carelessly discarded, leaked or overused contaminants also can find their way into an aquifer. Many activities on the surface near a drinking water well have the potential to affect the water quality in a few years' time. Because some

groundwater is used with little or no treatment, it is critical to prevent these aquifers from being contaminated. All public drinking water is tested regularly to ensure it is safe. When a problem is detected, it can be very costly to replace or treat a contaminated well or treat contaminated groundwater.

Identifying the drainage basin or watershed for a lake or river is almost as simple as observing water's tendency to flow downhill. Without layers of soil and bedrock to slowly filter water before it reaches a drinking water supply, as is the case with groundwater, surface water quality is rapidly affected by what happens in the watershed. For this reason, the Safe Drink-

ing Water Act requires surface water to be thoroughly filtered and disinfected to remove anything that may cause adverse health effects.

Source water protection is the key activity that involves the public in ensuring safe water supplies. State and federal regulations provide strict rules on how public water systems must treat and distribute drinking water. Those regulations don't necessarily affect source water before it enters the drinking water well or intake, however, and its quality has a huge impact on the viability and cost of the finished water.



Consider the case of a small town that uses a lake as its source of drinking water. The town water department must take basic lake water and turn it into pristine drinking water. If the lake already has good quality water, it may be an easy task. If the lake has been impacted by contaminants, the treatment process will be more difficult and expensive. If there was a way to improve water quality before the treatment process, it might save money.

A more important benefit than saving money is improved safety of our water supplies. Like any man-made process or machine, the water treatment process is not foolproof. The possibility always exists for

**(Opposite page) The Missouri River is an oft-tapped surface source water.**

**(Above) Columbia's water wells are located in the Missouri River bottoms near McBaine. Surface water sources provide drinking water for 2.5 million Missourians. Local water protection teams help define threats to water well fields and surface water resources.**





**(Above) New and old water towers serve the same subdivision in Columbia. (Above right) Water protection is always preferable to treatment. Even when contamination levels are low, the young and elderly are at increased risk. All public drinking water is tested regularly to ensure that it is safe. It can be expensive to replace a contaminated well or treat contaminated water.**

contaminants to sneak through the treatment process. Some microorganisms can make a person ill even if the contamination level is low. Through source water protection, the initial number of contaminants in the lake can be reduced, which lessens the chance of contaminants slipping through. This is called the multiple barrier approach, and health officials consider it crucial.

Source water protection is voluntary. There are several organizations that promote source water protection and are available to assist local efforts. In every case, local citizens are the key to protecting their own water supply. A local committee or source water protection team is usually necessary. It always is a good idea to include



people who live, work or own land in the source water area.

**T**he first task a source water protection team may want to complete is to determine the area they wish to protect. For groundwater systems, this should be an area surrounding the wells of interest. For surface water systems, they should protect the watershed upstream of the lake or river intake. For intakes on larger rivers or lakes, the watersheds can be very large. If the area is too big for the committee to effectively address, they may choose a smaller priority zone immediately upstream of their intake.

The committee also must determine which threats potentially affect the source water. These will vary from system to system. The Department of Natural Resources has conducted assessments for every water system in the state. These assessments are a great starting point for local community protection efforts. Common threats to public wells include leaking underground storage tanks or chemical spills. Drinking water lakes and streams may be more severely impacted by sediment, excess nutrients, pesticides or pathogens. The reason for identifying these threats is so the source water protection team can implement strategies to reduce the threats. Implementing these strategies can be the toughest part.

Some common challenges faced by small surface water supplies are impacts from excess pesticides and sediment. Some source water protection committees have offered cash incentives to farmers in the watershed to use an alternative to a troublesome pesticide. This has proven to be a successful and

worthwhile measure to decrease the cost of removing the pesticide at the water treatment plant. Other communities are taking advantage of the Missouri Conservation Reserve Enhancement Program (MoCREP), a program sponsored through the U.S. Department of Agriculture and the Missouri Department of Natural Resources to retire cropland in drinking water watersheds. MoCREP pays landowners to take land out of agricultural production. This results in reduced sediment, excess nutrients and pesticides entering the water source.

**T**he Conservation Reserve Program (CRP) is similar to MoCREP, but is not dedicated specifically to drinking water watersheds. There is also funding available to landowners from Missouri's Parks and Soils Sales Tax to install practices to reduce soil erosion and improve water quality. Additional funding from USDA includes the Environmental Quality Incentives Program (EQIP) which also funds practices for these same purposes. To learn more about these

with stakeholders on a voluntary basis. For every threat, there are countless methods for reducing the associated risk.

For more information on what may be threatening your drinking water and how you can begin to protect it, contact your local water supplier or the Missouri Department of Natural Resources.

Missouri is blessed with terrific natural water resources. Your water supplier works hard to ensure it is safely delivered to your tap. It is up to all of us to help protect and maintain that natural water quality so we can continue to enjoy safe, reliable and affordable drinking water. ☀️

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*Don Scott is an environmental engineer with the department's Public Drinking Water Branch.*

**Fayette Lake provides the water resources for Fayette residents. What happens in the lake's watershed rapidly affects surface water quality. Source water protection involves the public in keeping contaminants out of critical watersheds and community water supplies.**

**"It's important for people living near source waters, as well as developers, to understand that what they do on their property affects not only their water quality, but their neighbors' as well."**

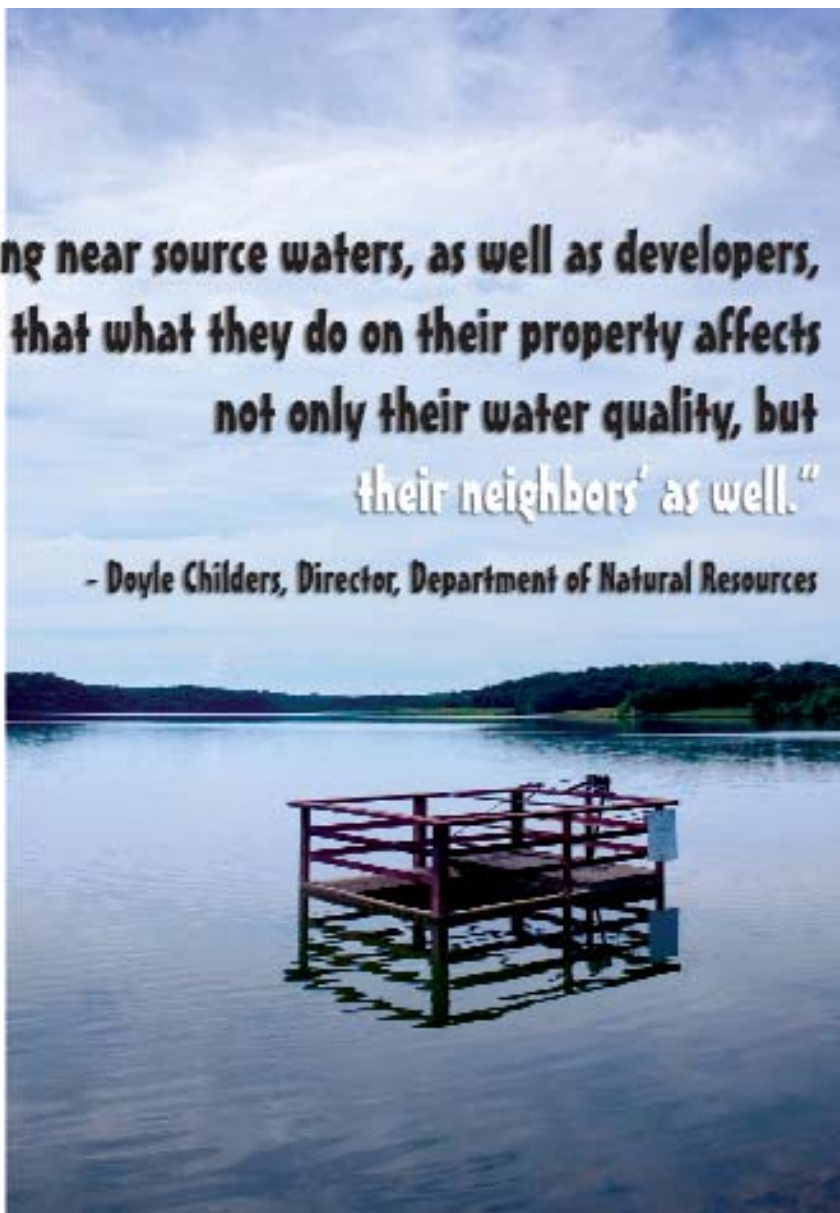
**- Doyle Childers, Director, Department of Natural Resources**

programs, contact your local soil and water conservation district.

Many rural water systems are experiencing development that places new homes and businesses in proximity to their water sources. These developments can be sources of sediment during construction and new sources of waste and potential contaminants once the developments are occupied. A wise strategy for a source water protection team is to visit with the developers and residents.

"It's important for people living near source waters, as well as developers, to understand that what they do on their property affects not only their water quality, but their neighbors' as well," said DNR Director Doyle Childers. This is an excellent strategy for surface and groundwater supplies and for planned or existing developments.

A source water protection committee can seek authority through city and county ordinances to control activity in their source water area. This is seldom done in Missouri and remains unnecessary when the source water protection team works effectively







# It's a Matter of







# Opinion

by Dawn Fredrickson



The Missouri Department of Natural Resources' Division of State Parks has a long and proud history of preserving the state's natural and cultural resources and providing recreational opportunities to Missouri citizens and visitors to the state. The department's success in balancing resource preservation while providing outstanding recreation is reflected in Missourians' willingness to continue the parks-and-soils sales tax, which is the primary funding source for the state park system. This vote of confidence from Missouri citizens, however, is a trust not taken lightly. Keenly aware of its responsibility to Missourians to protect the state's resources for future generations, the division must also ensure that its provision of recreational facilities and services best meets the needs of its users. One way to make sure that it is indeed meeting the needs of its users is to ask them their opinions regarding the quality of facilities and services and level of care the resources receive at Missouri's state parks and historic sites.

The division strives to offer myriad opportunities for its more than 17 million users to voice their opinions about the state's parks and historic sites. Each year, many of the parks and sites host public meetings to present upcoming events and provide an open forum for discussing issues of concern. Additionally, guest comment cards at each of the parks and sites provide the chance for visitors to rate the quality of service and facilities, suggest changes and make other observations about their experiences. Concession comment cards are available for visitors to comment on concession-run operations within the parks and sites, such as dining and lodging facilities. Visitors are also given the opportunity to review pro-

posed future development projects at individual parks and sites through a series of public meetings and opinion surveys. Visitors are able to voice their opinions via the Internet as well; last year, the division's e-mail address, [moparks@dnr.mo.gov], received more than 4,500 e-mails from people requesting information or assistance, listing concerns, or complimenting park staff on a job well done. State Parks' toll-free telephone number received approximately 78,000 calls, while more than 900 letters were received, many from people who care deeply about their state parks and historic sites and want to have their views heard.

Input is also requested from citizen advisory groups to help with policy and management decisions. For instance, the Americans with Disabilities Act Advisory Council was formed in 1993 to advise the Division of State Parks on practical ways to make facilities accessible while complying with the Americans with Disabilities Act. Another citizen advisory group, the Interpretive Themes Task Force, is composed of park interpreters and members of the minority community to examine historic themes included in the division's current interpretive programs and exhibits to ensure minority themes are addressed in future expansions and programs.

The Missouri State Park Advisory Board, a third group, was created to advise the department's state parks division regarding management policies and public services provided in the state park system.

A fourth citizen advisory group composed of environmental groups, wilderness advocates, and local park interest groups is assisting in writing management plans for each of the 11 state-designated wild areas.

**Opinions from tent campers, recreational vehicle travelers and boaters help shape decisions that improve services for visitors to Missouri's state parks. A citizens advisory group that provided input to park management decision-makers included the Americans with Disabilities Act Advisory Council, which worked to ensure that Missouri state parks and historic sites provide recreational opportunities to all visitors. Filling out a guest comment card can result in improvements to facilities, such as this electrification project at a campground in Table Rock State Park, where 36 of the campsites were upgraded to 50-amp service.**



DNR file photo

Surveys also were conducted asking visitors their opinions about specific issues. For example, in 2004, users were asked to participate in a survey regarding their satisfaction with the recently implemented centralized campground reservation system. Launched in 2003 and now available at 35 state parks, the centralized campground reservation system allows campers to reserve specific campsites through a toll-free telephone number or the Internet. Feedback was needed to gauge how users felt about the new reservation system.

Marian Fleischmann, manager of the Division of State Parks' customer service office, was particularly interested in knowing how users rated the telephone reservation agents and the reservation Web site. More than 1,200 people responded to this survey, with 76 percent of the respondents either

satisfied or very satisfied with the new reservation system. Additionally, many agreed that the centralized campground reservation system allowed them an opportunity to visit state parks they were never able to visit in the past.

With any new system, however, there is always room for improvement and enhancement. For instance, several respondents provided suggestions for improving the Web site and the toll-free reservation service. As Fleischmann says, "Without this very specific feedback, we would have no way of knowing how well we're meeting the needs of our camping customers. If we are not meeting their needs, we need to be looking for ways to improve the reservation system."

Another survey conducted in 2004 was the Missing Masterpieces survey. The purpose of this survey was to gather public input regarding the standards the division uses to determine if potential new areas are worthy of including in the state park system. Additionally, the survey allowed participants to suggest "missing masterpieces" – specific natural, cultural or recreational areas they feel are missing from the system.

More than 1,400 paper and Internet surveys were received, with an overwhelming percentage of respondents who agreed with the standards used to evaluate new areas.

Although some respondents voiced concern regarding the division's ability to expand its system within a limited budget, numerous participants also favored expansion of the current system to include new areas. These new areas included development of additional sites that interpret Native American and African American history and

culture; greater emphasis on preserving Missouri's diverse immigrant history; development of additional sites close to urban population centers; and greater emphasis on acquiring and protecting watersheds, wetlands and lands adjacent to rivers and streams. "Perhaps the most gratifying result of the survey," said Doug Eiken, director of the Missouri Department of Natural Resources' Division of State Parks, "was the sense of ownership expressed by a large percentage of respondents, many of whom referred to Missouri's state park system as 'our system.'"

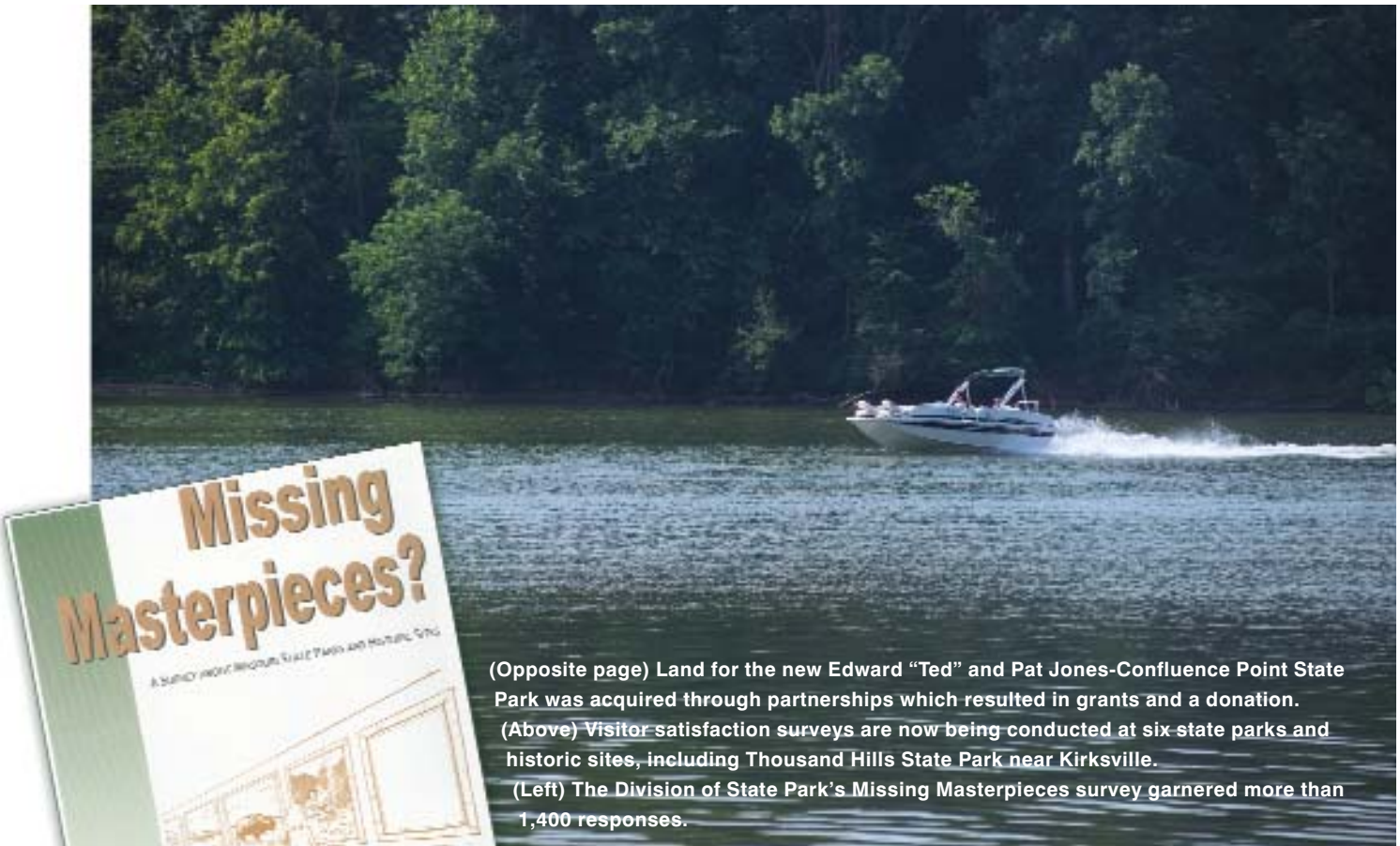
Results from the Missing Masterpieces survey have been summarized into a report, which is available to the public. From the survey results, an action plan is being developed that will help guide future management decisions regarding how best to protect Missouri's natural and cultural resources. This plan will explore and recommend ways the division can most effectively preserve the state's resources while being an efficient steward of the funds generated from the parks-and-soils sales tax.

"We will continue to look for opportunities for new acquisitions and expansions, but we will be aggressive in seeking outside funding sources and cooperative partnerships for these projects," said Eiken. These will include federal grants, funding from the newly established Missouri State Parks Foundation, and private donations. In addition to seeking external funding sources, the plan will also recommend the division continue to establish cooperative partnerships with federal, state, and local agencies and not-for-profit organizations.

For instance, one of the newest state parks in the system was created through both partnerships and outside funding, which resulted in a donation and two grants totaling more than \$3 million. Edward "Ted" and Pat Jones-Confluence Point State Park, located at the confluence of the Missouri and Mississippi rivers, was made possible through a donation from the Danforth Foundation, a grant from The Great Rivers Greenway District and a federal grant. The action plan will use examples like this to recommend means



“Results from these surveys will be used to improve the services and facilities offered at the parks and sites. So, on your next visit to a state park or historic site, don’t be surprised if someone asks you for your opinion. Your opinion matters.” — Doug Eiken, Director, Division of State Parks.



(Opposite page) Land for the new Edward “Ted” and Pat Jones-Confluence Point State Park was acquired through partnerships which resulted in grants and a donation.

(Above) Visitor satisfaction surveys are now being conducted at six state parks and historic sites, including Thousand Hills State Park near Kirksville.

(Left) The Division of State Park’s Missing Masterpieces survey garnered more than 1,400 responses.

DNR photo by Scott Myers

to expand State Park’s funding and partnership opportunities while pursuing those “missing masterpieces” that meet the established standards.

For more than ten years, the division has sought input on user satisfaction through surveys. Past results have shown that almost 99 percent of the users surveyed were satisfied with their visits to Missouri state parks and historic sites. State Parks is continuing its efforts to gather public opinion

through satisfaction surveys being collected at Meramec, Route 66, Castlewood, and Roaring River state parks and Felix Valle State Historic Site.

Since July of this year, survey clerks have been asking visitors at these parks to complete short questionnaires regarding how satisfied they are with their visits, specifically how satisfied they are with the services and facilities offered within the parks. Surveys will be collected until June 2006, when the department will begin another round of surveys at several other state parks and historic sites.

“Results from these surveys will be used to improve the services and facilities offered at the parks and sites.

So, on your next visit to a state park or historic site, don’t be surprised if someone asks you for your opinion. Your opinion matters,” said Eiken.

For more information about this article, to request a copy of a report from the Missing Masterpieces survey, or to provide your own input, please contact the Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf). Information also can be requested by e-mail at [moparks@dnr.mo.gov]. ☀

*Dawn Fredrickson is planning section chief for the Department of Natural Resources’ Division of State Parks.*



# Crop-ortunities

## *Gas Prices Help Fuel Corn and Soybean Future*

by Sam Orr

photographs by Scott Myers

**M**issouri's farmers grow more corn and soybeans than any other field crops. A series of circumstances have come together to create new opportunities for some of our state's farmers to produce fuel ethanol and biodiesel from these tried and true feedstocks.

Markets for renewable fuels were given a boost in spring 2005. Data from the Missouri Department of Natural Resources and the oil industry showed that the average price for regular unleaded gasoline in Missouri was 33 percent higher compared to the same time in 2004. Diesel fuel prices were 43 percent higher. These higher fuel costs are creating greater demand for ethanol in Missouri.

Farmer-investors in Missouri's emerging ethanol industry have begun to see corn prices rise 15 to 20 cents per

bushel over corn markets not adjacent to ethanol plants. As these investors seek corn supplies to meet a growing demand for ethanol, the benefits are expected to reach more Missouri farmers.

While we might be paying more to drive these days, higher fuel prices bode well for renewable fuel production in Missouri. Production and use of these fuels provide multiple benefits to our state.

### **Energy Supply**

"Presently, we are importing 58 percent of the oil we use and within twenty years our country will be importing 68 percent of the oil we use," explained Anita Randolph, director of the department's Energy Center. "By producing





**(Opposite page) Ethanol tanker cars stand by at the Mid-Missouri Energy Inc. ethanol plant at Malta Bend. Three such plants in Missouri have the ability to produce 110 million gallons of ethanol per year.**

**(Right) Missouri crops such as soybeans are finding new markets as feedstocks for the production of alternative fuels used in gasoline and diesel engines.**

ethanol and biodiesel fuels, Missouri is contributing to state and national energy security,” she added.

The most common blend of ethanol in Missouri uses 5.7 percent ethanol with a low-volatility unleaded blendstock to reduce air pollution in urban areas. Ten percent and 85 percent (E-85) blends also are available in some areas. Missourians used more than 1.2 billion gallons of ethanol-blended fuel in 2004. The Missouri Department of Agriculture’s Division of Weights and Measures will maintain its oversight of fuel additives to ensure the proper operating levels for ethanol blends.

Gov. Matt Blunt pledged to seek a 10 percent ethanol content requirement for all gasoline used in Missouri. Such a program would provide additional market support for investors in our state’s renewable fuel production system. Would it lower fuel prices at the pump? John Buchanan, a senior policy planner with the department’s Energy Center, reports that when gasoline prices rose to \$2 and above, the price for E-85 actually dropped. He added that part of the drop was due to a lower price for wholesale ethanol at the time.

“If a 10 percent mandate [for ethanol content] was established in Missouri, there is a possibility and a probability that pump prices would drop, but this would not be guaranteed,” said Buchanan. “Jobbers [petroleum wholesalers] may keep ethanol and gasoline at similar prices. It would be up to the pricing system.”

Buchanan also suggests that motorists check their vehicle owner’s manual to find out what impact ethanol might have on their engines’ performance and manufacturer’s warranty. He said that blends at or below 10 percent don’t generally pose a problem, but those above E-20 and especially E-85 blends should be confined to flex-fuel vehicles. (See sidebar on page 12.)



Missouri currently is home to three ethanol plants: Northeast Missouri Grain Processors in Macon, Golden Triangle Energy Cooperative at Craig and Mid-Missouri Energy at Malta Bend. Those facilities have a combined production capacity of 110 million gallons per year (MGY). Another 45 MGY will come on line this fall when East-Central Ag Products in Laddonia begins production.

Two biodiesel production facilities are now in operation in Missouri. Missouri Better Bean in Bunceton produces 3 MGY. Missouri Bio-Fuels, in Bethel, currently is increasing production to 2 MGY. As the market grows, Missouri Bio-Fuels plans to construct a second facility that would produce 8 MGY. A third firm, Mid-America Biofuels, will add 30 MGY when its plant in Mexico begins production.

Biodiesel is most often used in blends of two (B-2), five (B-5) or 20 percent (B-20) biodiesel mixed with petroleum diesel. It can be used in any blend or as 100 percent biodiesel in any diesel engine without requiring engine modifications.

Biodiesel, or soy diesel, as it is known in Missouri, is not raw vegetable oil. The process used to extract the product, as well as the specifications of the final fuel must meet standards. These are set by the American Society of Testing and Materials (ASTM). Commercial biodiesel facilities are required to meet ASTM standards.

“Our soybean farmers view biodiesel as the most promising soy product to date, and we have spent a lot of time building markets







**Check ...  
before you pump!**

[www.e85fuel.com/e85101/flexfuelvehicles.php](http://www.e85fuel.com/e85101/flexfuelvehicles.php)

is a Web address where vehicle owners may find out if their own car or truck can safely operate with ethanol/gasoline fuel blends. It also is suggested that the vehicle owner's manual be checked for information on the use of ethanol fuel additives in a particular vehicle.

As long as soy diesel or biodiesel meets specifications of the American Society of Testing and Materials (ASTM), it can be used in any concentration with petroleum-based diesel fuel in diesel fuel engines with little or no modification. Uncertified blends may eventually cause engine damage. Again, to avoid potential warranty problems, check the vehicle owner's manual.

and interest in the fuel," said Dale R. Ludwig, executive director and CEO of the Missouri Soybean Association.

In 2004, more than 922,000 gallons of 100 percent biodiesel were blended with conventional diesel fuels and sold to Missourians in over 100 locations. With more than 1.1 billion gallons of diesel fuel sold annually in Missouri, a large market is potentially available for homegrown biodiesel.

When using the latest manufacturing technologies, both of these renewable fuels yield more energy than is used to produce them. Biodiesel contains almost four times as much energy as the amount of fossil energy needed to produce it. U.S. Department of Agriculture data from 2004 determined that the energy in a gallon of ethanol and its grain byproducts was 67 percent more than the total energy used to produce it. Studies of the energy balance of ethanol production have reached varying conclusions. This results from improvements in technology as well as the choice of energy inputs and outputs used in the various studies.

## Environmental Benefits

Compared to petroleum diesel, 100 percent (neat) biodiesel reduces carbon monoxide emissions and particulate emissions are reduced by more than 50 percent. While nitrogen oxide emissions are slightly elevated when using neat biodiesel, emissions of hydrocarbons and sulfur are virtually eliminated. Use of biodiesel at a B-20 blend also provides significant emission reductions.

Ethanol is a very different molecule than the hydrocarbons contained in unleaded gasoline, and the chemical and physical properties of gasoline will vary from one market to another. This means that when ethanol is used as a fuel additive the resulting pollution attributes of the mix can vary.

In the St. Louis area, ethanol is used as an additive in more than 99 percent of the reformulated gasoline used to reduce air pollution. This is possible by using what is called a low volatility blendstock, which prevents the blended fuel from evaporating too readily. Tailpipe emissions are reduced, due to the increased oxygen content in the ethanol. E-85 blends also provide emissions benefits when compared to unleaded gasoline.

Since both ethanol and biodiesel are biodegradable, they pose a reduced danger to water resources if a spill occurs.

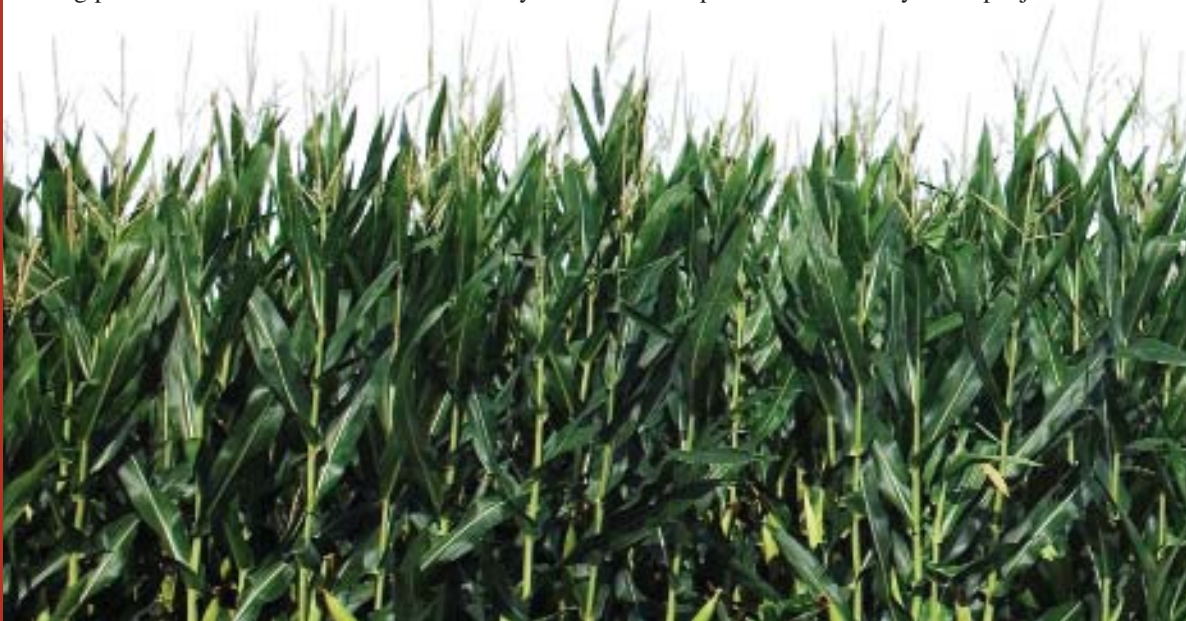
## Economic Impacts

Dr. Donald Van Dyne conducted a study to determine the economic impacts of a 200 MGY corn-to-ethanol industry in Missouri. Van Dyne is a retired research associate professor from the University of Missouri-Columbia. In the early 1990s, his studies helped predict the economic potential of ethanol production in Missouri.

"This [new] study documents a nearly \$1 billion total impact and what some of us in the industry have believed all along – that ethanol can cause a renewal in agriculture in rural Missouri and benefit the entire state economy," explained Gary Marshall, Missouri Corn Growers Association CEO.

Byron Fink, President of Golden Triangle Energy Cooperative, added, "I hear people asking if our ethanol industry can be overbuilt. Will we produce too much for our markets? I have to ask how we can possibly become overbuilt when our country is importing over 60 percent of its motor fuels."

Lindell Smith, President of Missouri Bio-Fuels views the benefits from a state and local perspective. "We decided that a project at home would provide a much needed economic boost to not only our local but an expanded community. This project





# Biodiesel & Ethanol Plants in Missouri

## BIODIESEL IN PRODUCTION

**1** Missouri Better Bean –  
Bunceton  
660-427-5444

**2** Missouri Biofuels –  
Bethel  
660-284-6250

## BIODIESEL, PLANNED

**3** Mid-America Biofuels, LLC –  
Mexico  
573-635-3819



## ETHANOL IN PRODUCTION

**4** NE Missouri Grain, LLC – Macon  
[www.nemog.com](http://www.nemog.com)  
660-385-2789

**5** Golden Triangle Energy Coop. – Craig  
[www.goldentriangleenergy.com](http://www.goldentriangleenergy.com)  
660-683-5646

**6** Mid-Missouri Energy Inc. – Malta Bend  
[www.midmissourienergy.com](http://www.midmissourienergy.com)  
660-595-0144

## ETHANOL, PLANNED

**7** East Central Ag Products – Laddonia  
[www.ecapinc.org](http://www.ecapinc.org)  
573-373-2232

will create jobs at the plant as well as jobs locally. The revenue taxes from this new business make everyone a winner.”

Northeast Missouri Grain Processors of Macon found an innovative way to reduce their natural gas costs. “The city ... needed additional electric generation capacity and we needed cheaper steam. Our ethanol plant purchases affordable steam made by the new gas turbine generator and this arrangement with the city utility provides the income to make their electricity affordable,” said company president John Eggleston.

Eggleston said that concern over ethanol’s impact on engine operation would be resolved through consumer education. “I’ve been using ethanol in all the gasoline engines on my farm for the past 10 years – everything from chainsaws, lawnmowers and tractors to trucks – without any problems.”

## What’s Next

Biofuel market and production facility development is the leading edge of a new way of providing energy and products from renewable plant materials. Some call this new age the carbohydrate economy.

Missouri has begun a journey to sustainability as it adopts renewable motor fuels. More exciting is the realization that this journey has just begun.

For more information on ethanol and biodiesel in Missouri, call the Department of Natural Resources Energy Center at (573) 751-3443 or 1-800-361-4827; or check the department’s Web site at [[www.dnr.mo.gov/energy/transportation/altfuels.htm](http://www.dnr.mo.gov/energy/transportation/altfuels.htm)]. ☀

*Sam Orr is an energy planner with the department’s Energy Center.*



## Summer 2005 Drought Worst in 17 Years

On July 29, 2005, Missouri's Drought Assessment Committee declared drought alerts or advisories for more than 100 Missouri counties, while another 54 counties were under a drought advisory.



On Aug. 8, Gov. Matt Blunt asked the U.S. Dept. of Agriculture (USDA) to declare 109 counties as drought disaster areas.

On Aug. 17, the Climate and Weather Sub-Committee (C&W) of the Drought Assessment Committee met by conference call to discuss the summer 2005 drought status in Missouri. The committee determined that the drought, while eased in some areas, continued in the state.

The Farm Services Agency (FSA) of the U.S. Department of Agriculture reported that 112 county disaster declaration requests were sent to Washington D.C. These requests needed federal approval before receiving disaster declaration status. Atchison and Holt counties and the city of St. Louis were not included in the request for federal relief.

Twenty-two counties were approved for more than \$1 million in federal cost share funds under the Emergency Conservation Program for emergency livestock water supplies. The state FSA office requested more than \$2.6 million for emergency livestock water supplies in a total of thirty-seven counties.

The USDA can take no action on livestock assistance programs or crop disaster payments until Congress provides the specific authority and funding, which is unlikely until after Jan. 1, 2006.

On Aug. 25, Sen. Jim Talent and Undersecretary of Agriculture Bill Hawks held a round-table discussion with agricultural producers in St. Louis. It was announced that the USDA had declared virtually all of Missouri a disaster area because of the severe drought – the worst in 17 years. USDA guidelines require a minimum 30 percent

production loss of at least one crop for a county to be included in a disaster designation. Unusually hot, dry weather reduced the projected yields of many Missouri crops. Corn production is 36 percent below last year's record production. The soybean crop is down 30 percent from last year, but still seven percent above the 2003 harvest, according to the Missouri Agricultural Statistics Service.

According to a long-range weather forecast issued by the National Oceanic and Atmospheric Administration's Climate Prediction Center, drier weather was expected to return in September.

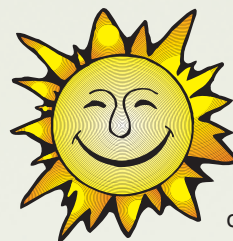
To view the current drought status map, visit the department's Drought Information Web page at: [\[www.dnr.mo.gov/geology/droughtupdate.htm\]](http://www.dnr.mo.gov/geology/droughtupdate.htm).

The Missouri Drought Assessment Committee (DAC) is responsible for assessing drought conditions across the state and recommending actions to ease the drought's adverse effects. Agencies represented on the committee include the state departments of Natural Resources, Agriculture, Public Safety, Health and Senior Services, Conservation and Economic Development; U.S. departments of Commerce, Agriculture and Interior; U.S. Army; University of Missouri-Columbia; U.S. Environmental Protection Agency; and the Federal Emergency Management Agency.

The DAC is activated by the director of the Department of Natural Resources at the request of the governor, when the governor declares a Phase 2 Drought Alert in any county of the state. The governor declares a Phase 2 Drought Alert when informed by the department director that the standing Missouri Climate and Weather Committee has determined that over a several month period, dry conditions warrant a drought declaration.

For more information, call the Missouri Department of Natural Resources at 1-800-361-4827 or contact the department's Water Resources Program at (573) 751-2867.

## St. Louis School Gets Solar Array



Parkway Northeast Middle School, St. Louis, is the first participant in the Missouri Schools Going Solar (MSGs) program to receive its one-kilowatt photovoltaic array, which was dedicated at a July 7 ceremony.

The program, administered by the Missouri Department of Natural Resources in partnership with AmerenUE and the EarthWay Center in St. Louis, offers grants to participating schools to partially offset the cost of installing the arrays and training so teachers can integrate them into the school's science curriculum.

Parkway North was the first of the initial nine schools – seven in the St. Louis area and one each in Jefferson City and Brookfield – to have their array installed. Six other schools have submitted applications for the program.

"Our goal is to educate students, teachers and communities about the sources of energy we use in our society, the value of renewable solar energy in meeting current and future energy needs and solar energy technologies," said Anita Randolph, director of the department's Energy Center. "The arrays will generate some electricity for the school building and the program offers an opportunity for students, parents, teachers, government agencies, utilities and communities to increase their awareness and familiarity with solar electric energy technologies," Randolph added.

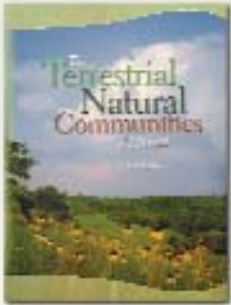
The Energy Center manages the program on behalf of the Residential/Commercial Energy Efficiency Collaborative, which was formed as part of a settlement approved in 2002 by the Missouri Public Service Commission. As part of the settlement, AmerenUE has made available a total of \$350,000, through June 2007, to implement the MSGS program in schools within its Missouri electric service territory.

Participating schools contribute \$2,500 toward the cost of installing the





system. More details and applications are available online at [www.dnr.mo.gov/energy/renewables/solar-schools.htm] or by contacting the department's St. Louis Urban Outreach Office at (314) 340-5900.



### **Natural Missouri Revealed in Book**

Have you ever wondered what Missouri looked like before big cities and miles of

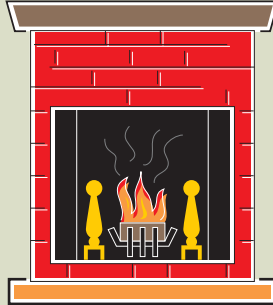
highway were developed? "The Terrestrial Natural Communities of Missouri," showcases what Missouri's native plant and animal communities looked like prior to settlement.

First published in 1985, this revised edition is approximately 500 pages long and includes nearly 300 color photographs, plus digital images, maps and charts. The text gives detailed descriptions of Missouri's terrestrial natural communities, including forest, woodland, savanna, prairie, glade, cliff, stream edge, wetland and cave. Along with descriptions, there are also numerous examples of where you can still see these communities today; many of these examples are in Missouri state parks. The book also includes information about the conservation status, threats and ecological restoration of the terrestrial natural communities.

Published by the Missouri Natural Areas Committee, the book is a cooperative project of several federal and state agencies, including the Missouri Department of Natural Resources and the U.S. Forest Service. The book may be purchased at many state park and historic site visitor centers. Copies also may be ordered by contacting the Department of Natural Resources at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf) or at [moparks@dnr.mo.gov]. The cost is \$29.95 plus shipping and handling fees.

## **environmental n o t e s**

### **New Face for an Old Flame**



When oil prices rose in the early 1970s, many homeowners turned to wood heat for economical comfort. Unfortunately, quite a few of the woodburning stoves that were installed at that time were inefficient and caused health problems and environmental concerns. Since then, wood heat use gradually fell behind fuel oil and natural gas-fired systems, but some of the old stoves remain in use or for sale.

Today, with energy prices on the rise again, the U.S. Environmental Protection Agency (EPA) is stepping up efforts to help people obtain EPA-certified woodstoves and fireplace inserts and learn how to

properly operate a wood heat system. A properly installed and operated wood heat system can emit 60 to 80 percent less indoor and neighborhood air pollution while delivering more heat.

Technical improvements, such as insulated stainless steel chimneys, flexible steel chimney inserts, stoves using ceramic catalytic baffles and airtight fireplace inserts can bring wood burning into this century.

Before you install new wood burning equipment:

- Check with your local government to see if a building permit is required.
- Contact your insurance agent to find out if the installation will affect your insurance premiums.
- Spend time with your retailer, installer or contractor to make sure you understand what is involved and what the cost will be. If you are installing equipment yourself, get advice from a trained professional as necessary.
- Read installation instructions carefully.

When operating a wood-to-heat system:

- Use hardwood that has dried two to three years – to around 25 percent moisture.
- Only bring in as much wood as needed immediately to prevent molds and insects from entering the home.
- Never burn garbage, plastic, magazines, boxes or wrappers that carry colored inks. All may produce harmful chemicals when burned.
- Never burn ocean driftwood, plywood, particleboard, wood with glue on it, coated, painted or pressure-treated woods. All release harmful chemicals when burned.
- Never burn wet, rotten, diseased or moldy wood.

Check out [www.epa.gov/woodstoves] for more information on clean-burning stoves, safe use of firewood and protecting the home and community environment while staying warm economically.

### **New Camper Cabins In Some Parks**

Missouri state parks now offer a new kind of camping experience –



camper cabins. These log cabins, located within the campgrounds at Mark Twain State Park near Stoutsville and Stockton State Park near Stockton, offer a camping experience without having to pitch your own tent.

Camper cabin accommodations include a queen-size bed, a full-size futon and a carpeted loft for sleeping bags. The camper cabins have electricity, heat and air conditioning but do not include water or restrooms. Modern central restrooms and shower houses in the campground are available to camper cabin visitors April through October. Visitors should bring their own camping gear such as cooking and eat-

ing utensils, linens and sleeping bags.

At Mark Twain State Park, the six camper cabins are located within the park's Puma campground with a wooded setting and lake views. Each cabin has a dining table, ceiling fan and microwave/toaster oven. Exterior amenities include a porch bench, picnic table, pedestal grill and campfire grill. Open-flame cooking is not allowed in the cabins or on the cabin porches.

To reserve a camper cabin at Mark Twain State Park, call 1-877-422-6766 (voice) or 1-866-468-9776 (Telecommunications Device for the Deaf) or go online at [www.mostateparks.com].

At Stockton State Park, the five camper cabins are located in the campground's western loop. Each cabin has a dining table, ceiling fan, microwave oven and mini refrigerator. Exterior amenities include a picnic

I have been receiving *Missouri Resources* for several years now and always find the articles informative and interesting. I was fascinated by the article by Dawn Fredrickson in the Spring/Summer Vol. 22 No. 2 issue entitled "Of Grave Concern." If it's a small world now, it truly was a small world in the 18th and 19th centuries. Everyone seemed to be related to everyone else in some way. My own family had dealings with the St. Louis Sappingtons when the Dents and Grants and Sappingtons were all living at or near White Haven.

At any rate, I recently visited Sappington House in Kirkwood – the first brick house in St. Louis and the home of Thomas Sappington, circa 1804 – with a friend from out of town. I enjoy visiting the house from time to time and like to take friends who have an interest in historic houses. While there, our guide pointed out a portrait of Dr. John Sappington and spoke of his "anti-fever pills" and encouraged us to visit Arrow Rock. I brought up the article about the cemetery where Dr. Sappington is buried, a fact of which they were unaware. I promised I would bring them a copy of the article if I could find it. Unfortunately, I marked up my copy as I am wont to do. (Another Sappington Cemetery is just several hundred yards from the historic home.) Could you please send me another copy of the Spring/Summer issue so that I can take them the original article with the colored pictures? I know they would be most interested in adding this to their body of knowledge.

Thank you for all the wonderful articles and my special thanks to Ms. Frederickson for the most interesting article on the three cemetery state historic sites.

Carol A. Vaughn  
St. Louis

We recently spent two days riding our bikes on the Katy Trail and had a great time. Even though heavy rains and high winds had come through the area several days before, the trail was well groomed and clear of fallen limbs our entire route. We could tell that DNR crews had come through and cleared the trail soon after the storm.

During our night on the trail, we stayed at one of the many nice bed-and-breakfasts that riders can pick from and had an outstanding (and reasonably priced) dinner at one of Her-

mann's fine restaurants. We met many other Missourians who were enjoying the ride, as we were, but we also met a number of people from other states who told us they had heard about the Katy Trail and came to the state just to ride it. The first-time riders we talked to were delighted to see clean bathrooms and covered rest stops every 15 to 20 miles, and were also surprised to see how many stores selling food, soft drinks and ice cream were open in the towns that dot the trail.

Anyone who has ridden the Katy Trail knows what a tremendous asset this state park is – one that provides countless recreational opportunities for Missouri citizens and a boost to state tourism. Thank you DNR for maintaining this great asset!

Beth and Dudley McCarter  
Creve Coeur

I received my *Missouri Resources* magazine (Vol. 22 No. 2) today and flipped it open to a familiar site, Gov. Daniel Dunklin's Grave State Historic Site (photo on page 21). Please note that this site is on the bluffs of the Mississippi River, not the Missouri.

Ted Jarvis  
Arnold

Editor's note:

*Mr. Jarvis is correct. Several readers called, wrote and e-mailed us regarding the error. The author correctly located the site in the story. Unfortunately, the editor wrote the photo cutline.*

Thank you for this great magazine that keeps us informed about our beloved state, Missouri. The information included in *Missouri Resources* helps us to understand our state much more than can be imagined. Please accept our sincerest gratitude.

Dee Carnes  
Pleasant Hill

## LETTERS



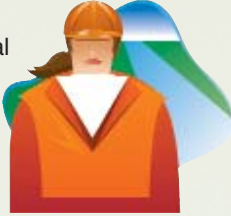
Letters intended for publication should be addressed to "Letters," *Missouri Resources*, P.O. Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 751-8084, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at moresdnr@dnr.mo.gov



table and a campfire grill. To reserve a camper cabin at Stockton State Park, call (417) 276-4259.

## Ignoring Gender Roles Wins Jobs Recognition

The Missouri Department of Natural Resources Land Survey Program, through a partnership with Rolla Technical Institute



(RTI), actively encourages nontraditional students to choose technical careers by offering students hands-on internships. During a May 2005 ceremony in Jefferson City, Land Survey Program Director J. Michael Flowers and Document Distribution Section Chief Carol Payne, were honored for their efforts with the Breaking Traditions Public Sector Employer Award.

Staff at RTI nominated Flowers and Payne for their active support of RTI's Drafting and Design program. Their efforts have led several nontraditional student-interns to successfully gain full-time employment in drafting and surveying positions. Thanks in part to such internships, career paths in land surveying and drafting have seen a break with tradition. In an industry that was formerly populated by males only, there are now 11 females. While this success is celebrated, there is still room for growth.

Quality partnerships between vocational educators and potential employers can successfully shape new directions for nontraditional students. "I am thankful for the relationship that the Land Survey Program has with the Drafting and Design program at RTI," said Payne. "Their dedicated instructors, Don Block and Chuck Berendzen, do an excellent job of recommending top-notch students. They provide extra, detailed training pertinent to the specific area where the students will be working," she added.

Both Flowers and Payne stated their appreciation for the Breaking Traditions award. Flowers said, "We are grateful for the award, but also are amply rewarded by the process. It makes us

feel good to know that we can effect a positive change in a formerly narrow category of employment. I'd like to encourage other technical employers to develop partnerships with vocational educators in their area. In doing so, all of Missouri benefits."

To learn more about the Land Survey Program, visit the department's Web pages at [[www.dnr.mo.gov/geology/Indsrv/Indsrvhp.htm](http://www.dnr.mo.gov/geology/Indsrv/Indsrvhp.htm)], or call the department toll-free at 1-800-361-4827.

## Missouri-Arkansas Border Redefined

Missouri's Land Survey Program (LSP), along with the Arkansas Land Commissioner's Land Survey Division, ended a long-time concern over the location of portions of the state boundary between Missouri and Arkansas. This was accomplished by retracing an 1848 survey and restoring surveyed positions with new markers and monuments. The new markers generally consist of a 36-inch long by 2.5-inch diameter aluminum pipe with a 3-inch diameter aluminum cap, stamped to mark the position. With the new markers in place, future surveyors and landowners along the state line will find it easier to locate property boundaries.

This boundary line was first established in 1848 by surveyors who traveled on foot, by horseback and in wagons. They set boundary markers with mounds of soil, wood posts and witness trees blazed and scribed to identify the mileposts. The state-of-the-art in 1848 used a surveyor's compass and a Gunter 33-foot (2 pole) chain. Although the accuracy of the boundary didn't meet the standards of today, the result of that survey remains the location of the Missouri-Arkansas state boundary.

Today, the methodology of 1848 has given way to electronic distance measurement, computer technology and the use of the Global Positioning System (GPS). This provides surveyors with the ability to measure very accurately.

According to Mike Flowers, state land surveyor and LSP director, with the department's Geological Survey and Resource Assessment Division

(GSRAD), "The first request to reexamine the boundary line came three years ago from the Missouri Department of Transportation and two county surveyors from Barry and McDonald Counties. In question was the intersection at Route 71, as it crosses into Arkansas just north of the Bella Vista Resort area. This was followed by additional requests to look at the boundary east of this location.

"The more we evaluated, there appeared to be a genuine need for resurveying the entire stretch between the southwest corner of the state, a bit south of Southwest City, and extending east to the community of Seilman in Barry County," Flowers continued. "Three years later, we have arrived at the completion of the project."

Similar projects across the state continue to keep the department busy. "There seems to be no end in sight, as the state's economic development continues to demand more specific location information for property exchange and expansions," said Mimi Garstang, state geologist and GSRAD director in Rolla.

To learn more about the land surveying of yesterday and today, visit the department's Web pages at: [[www.dnr.mo.gov/geology/Indsrv/Indsrvhp.htm](http://www.dnr.mo.gov/geology/Indsrv/Indsrvhp.htm)] or call toll free at 1-800-361-4827.

## Scrap Tire Cleanups Funded by Renewed Fee



The Missouri Department of Natural Resources is rolling forward with its scrap tire program. Beginning Oct. 1, retailers will collect a

50-cent fee for every new tire purchased in Missouri. The scrap tire fee will generate approximately \$2.1 million annually.

Previously known as the Waste Tire Fee, the fee was first established in 1990 and expired Jan. 1, 2004. Senate Bill 225 went into effect on Aug. 28, 2005.

"The department's waste tire program was one of the top ten in the nation," said Doyle Childers, director of the Missouri Department of Natural Resources. "The department is ecstatic to see the state's scrap tire fee renewed."

## TIME EXPOSURES

The Washington Hotel, one of the largest buildings on the square in Greenfield, county seat of Dade County, is listed on the National Register of Historic places for its support of local business. The hotel had its grand opening in 1882 and closed in the late 1960s. Through the days of traveling salesmen and theatrical troupes, the broad, two-story veranda on most of the building's three sides provided visitors with a place to rest and watch the busy community grow. The veranda may return if restoration plans are successful.

The Washington Hotel was commissioned by the Washington Lodge, Masonic Order No. 87 as an investment. It reportedly cost \$9,000 to build. The lodge owned it for 30 years. Although the lodge apparently didn't use the hotel for its own purposes, it was said to be successful from the start. In recent years, the lower floor housed a restaurant, beauty salon, barbershop, and watch and shoe repair shops. Rooms and parlors have become weekly and monthly rentals.



Send your photo to "Time Exposures," c/o Missouri Resources, P.O. Box 176, Jefferson City, MO 65102-0176. All pictures will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.

Washington Hotel National Register of Historic Places Nomination

The department will use the funds to clean up scrap tires from Missouri's landscapes and countryside. In addition, the department will provide grants to communities for recycled rubber playground surfaces and support educational outreach opportunities.

For more information call the Solid Waste Management Program at 1-800-361-4827 or (573) 751-5401 or visit the Web at [www.dnr.mo.gov/alpd/swmp/homeswmp.htm].

### Biomass Report Available Online

A new report has been compiled to help citizens and business developers better understand the location and amount of biomass resources in Missouri. Biomass is a term that includes materials such as grass, wood, manure, crop residues and organic portions of materials that make it into Missouri's waste stream. "An

Assessment of Biomass Feedstock Availability in Missouri" is now available on the Department's Energy Center Web page at [www.dnr.mo.gov/energy/renewables/biomass.htm].

The common link between these materials is that they contain carbohydrates that can be converted into energy, fuels and products and then substituted for products currently made from fossil resources.

### Missouri Has New 50-cent Battery Fee

Beginning Oct. 1, the Missouri Department of Natural Resources will receive a 50-cent battery fee from every lead-acid battery greater than 6-volts purchased in Missouri. Agricultural use purchases of batteries are exempt from the fee.

The battery fee is included as part of Senate Bill 225. The money raised from

the 50-cent battery fee will help protect Missourians by supporting the state's hazardous waste cleanup efforts.

Over the years, the amount of hazardous waste generated and the number of companies that produce hazardous waste has decreased. A less complicated fee structure was included as part of the bill to help businesses who manage or generate hazardous waste. The bill added the battery fee to supplement the reduced fees paid by hazardous waste generators and hazardous waste management facilities.

For more information on the 50-cent lead-acid battery fee, please contact the Missouri Department of Natural Resources' Hazardous Waste Program at 1-800-361-4827 or (573) 751-3176.

For news releases on the Web, visit [www.dnr.mo.gov/newsrel](http://www.dnr.mo.gov/newsrel). For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at [www.dnr.mo.gov/calendar/search.do](http://www.dnr.mo.gov/calendar/search.do).





## Wayne Brown He Picked Up Where Others Left Off

**T**he Missouri Department of Natural Resources uses hidden cameras to collect evidence that helps convict people for illegally dumping trash on private property along public roads. In Saline County, several illegal dumpers have been convicted and most were ordered by the court to pay a \$750 share of the cost of cleaning up the trash dumps.

However, when bids for the cleanups were requested, the projected costs were found to be well above the amount of money collected from the lawbreakers. Wayne Brown, a local contractor and one of those bidding on the cleanup of sites near Gilliam and Waverly, then offered to do the job for what the county could afford to pay. Terry Ball and Craig Abbott, the environmental investigators who worked on the Saline County cases, stopped by the Gilliam site while Brown and his crew were cleaning it up. "It was impressive," said Ball. "They did a great job there. They even encountered thousands of hypodermic needles that had to be picked up and disposed of as special waste. I'm sure Brown didn't make any money on the project."

The investigators, who recognize the challenges of trash site cleanups, said Brown's crew also took pride in doing the job and making sure it was done right. They hauled metals to recyclers, took scrap tires to a processor in Odessa and even installed a drainpipe across a road to prevent erosion at the site. "I'd say Wayne and his crew definitely deserve an 'atta boy' for this job," said Ball. Department investigator Ball also talked to Fred Utlaut, owner of the property near Waverly, where cameras nabbed several more illegal dumpers in the act of spoiling Missouri's scenery. Mr. Utlaut said the dumpsite had been cleaned up "beyond his wildest dreams." Utlaut added, "Wayne Brown and his crew from Gilliam left the site looking like a park more than anything else."

Utlaut told the investigator that he was amazed at the volume of garbage that was taken out of the illegal dumpsite and was impressed with Brown's ability to get down into the deep ravine to take it all out. He said that Brown even brought in fill dirt to level off some of the area. The landowner said that once the word got out that illegal dumpers had been convicted and fined and "No Dumping" signs were posted in the area, "People wouldn't even slow down anymore as they drove past the place. They were afraid they were on camera!" said Utlaut. He said that before the cleanup, he had a hard time keeping scavengers out of the illegal dump. "There were always people there," Utlaut said. "Even whole families with young kids were rummaging through the garbage."

Utlaut said that he appreciated the department's initiative in targeting the dumpsite and Brown's efforts to follow through to the end. The site generated evidence to charge nine people with illegal dumping and brought \$7,750 in restitution to the county. One defendant remains at large, with a warrant for his arrest. In addition to sending him a letter of appreciation for his generous and outstanding work on the cleanups, the Department of Natural Resources is proud to name Wayne Brown to the Resource Honor Roll.



**Wayne Brown**

## Joe Pitts Environmental Educators' Educator

**J**oe Pitts, chief of the Missouri Department of Natural Resources' environmental education unit, was recently recognized with the Environmental Education Award, presented by the Springfield/Greene County group, Choose Environmental Excellence.

"Joe is a tireless advocate for the important role of education in maintaining a healthy environment," Barbara Lucks said at the 2005 Earth Day presentation. "He coaches, motivates, inspires and assists those of us who work toward environmental literacy." Lucks is materials recovery and education coordinator for the City of Springfield Public Works Department. After 10 years as a high school science and biology teacher, Pitts joined the department's Water Pollution Control Program in 1989 and began his work as an environmental educator with the department in 1992. He became the state coordinator for Project WET (Water Education for Teachers) in 1995 and continues to serve in that capacity. He coordinates this effort with 280 trained facilitators who provide workshops to other Missouri educators. He also served on the national board of directors for Project WET.



**Joe Pitts**

As a member of the department's three-person environmental education unit, Pitts also conducts regional workshops among the state's 65,000 teachers to help them present regular classroom subjects using links to the natural environment. The education unit also supports the efforts of the Missouri Environmental Education Association (MEEA), which serves the state's environmental educators. "We have a statewide presence," Pitts said. "We list 7,500 teachers, representing 600 communities in all 114 counties, on our database. We provide hands-on workshops that offer college credits in professional development opportunities within two college courses each year. This starts a ripple effect among educators that reaches most Missouri classrooms. These activities focus on teaching students how to think, not what to think." He added that the department's educational efforts emerged soon after the department was organized more than 30 years ago and has long been a component of the Geological Survey and Resource Assessment Division (GSRAD) and Division of State Parks (DSP). "We also formed partnerships with the Corps of Engineers, Fish and Wildlife Service and Forest Service, among others, to provide high-quality, low-cost information to teachers. There are hundreds of people out there helping us deliver this educational assistance," Pitts said.

Pitts also would like to see stronger ties with MEEA and an expansion of Project WET and its related national offerings, Project Learning Tree and Project WILD, that are coordinated through the Missouri Department of Conservation. "Any Missouri teacher who wants these tools in the classroom should have access to them."

Pitts attended Southwest Missouri State University (SMSU), where he earned a bachelor's degree in wildlife conservation and management and a secondary teaching certification. He also has a master's degree in biology from SMSU.



# Katy Trail State Park

by Jeff Durbin

**K**aty Trail State Park is Missouri's kaleidoscope state park. A slight turn of the kaleidoscope shows a Saturday afternoon family outing under dramatic Missouri River bluffs or a pleasant, traffic-free path for exercise during early morning or evening. Further turns reveal a day in the sun on the rolling Osage Plains, a commuter route in Sedalia or St. Charles, or a challenging journey across four-fifths of the state. Katy Trail State Park is not only a multiple-use state park, for hiking, bicycling and equestrian use, but a multiple-user state park – attracting walkers, birders, history buffs, horse riders, bicyclists and amateur geologists.

Katy Trail State Park is surely the most oddly shaped of Missouri's parks at 225 miles long and 100 feet wide. The dimensions are a clue that the Katy is a rails-to-trail conversion. The rails were laid by the



Missouri-Kansas-Texas (MKT) Railroad, which connected St. Louis to the Gulf of Mexico. Take the K and T of those initials, and you have the origin of the Katy name. The line on which today's Katy Trail runs was built between 1870 and 1893. When the MKT Railroad decided to cease operations in 1986, it led to the creation of a recreational trail in Missouri.

Under the 1983 National Trails System Act, a railroad line that would otherwise be abandoned is "banked" for potential future use. This keeps the corridor intact in case it is needed again. In the meantime, the right of way becomes a public recreational trail. A U.S. Supreme Court decision in 1990 upheld the federal act permitting these rail-banking and recreation uses. Thanks to the generosity of Edward and Pat Jones, who gave \$2.2 million for its initial development, the Missouri Department of Natural Resources began work on Katy Trail State Park the same year. The Katy Trail is now part of the Lewis and Clark National Historic Trail (it comprises the longest non-motorized segment), and the cross-country American Discovery Trail. It also is a Millennium Legacy Trail, designated for its importance to future generations.

The former railroad is now a ribbon across Missouri, from Clinton in the west to St. Charles in the east, taking in much of the state's scenery, ecological landscapes, and cultural heritage. Beyond the 10-foot-wide trail of crushed limestone, there is so much to see that you need a list to organize your travel itinerary:

**Wildlife** – including birds such as orioles, indigo buntings and turkey vultures, and mammals such as groundhogs and deer  
**Katy Railroad history** – remnant signals, telegraph poles, mile markers, and vintage bridges are unique points of interest  
**Missouri history** – French place names from early Missouri River settlement and travel, the Boone family, the Boonslick region, the Lewis and Clark expedition, and the Rhineland region of winemaking German immigrants

**Agriculture** – the wide river bottoms are home to corn and soybeans, milo, sunflowers and pumpkins

**The Missouri River** – semi-tamed with wing dams and reinforced banks; but also semi-wild with sloughs, sandbars and islands, bordered by huge dolomite bluffs

Given all these features, every Katy Trail user probably has personal favorites. Many

people in mid-Missouri go to Rocheport again and again for the town's atmosphere and the way the river pins the trail against the tall Manitou bluffs stretching to McBaine. Others may prefer the wine region around Augusta, or the equestrian section between Sedalia and Calhoun.

Some trail users favor the bluffs and river views from Portland to Treloar, or the road cuts and deep ravines between Pilot Grove and Clifton City. The 100-foot right of way shelters a variety of birds in its woods and thickets, and colorful, mixed flocks can brighten even a winter's day. In summer, a tree-tunnel of shade is a treat. A path winding from the trail to a bench looking out over the Missouri River is worthwhile in any season. An old riveted steel bridge from the 1920s, with the manufacturer and date stamped on it, or bridges of arched concrete or wooden piles, appeal to many railroad enthusiasts. Purple-pink redbuds set against the new flush of green in April, old grain elevators, prairie grasses and open vistas – all these Katy scenes have their devotees.

**T**he possibility the trail may eventually link with other trails to allow a border-to-border experience could make it an even more attractive draw for tourists. Currently the trail attracts around 400,000 visitors a year, many from outside Missouri, and a surprising number from overseas. The Katy, after all, is the longest developed rails-to-trails project in the United States.

Trail users can choose among 25 trailheads to get on and off the Katy – roughly one every ten miles. Trailheads, however, may be as many as 16 miles apart, so users should plan ahead. As former railroad stops, the trailheads are naturally located in communities small and large along the Katy route. Some cities, such as St. Charles,



DNR photos by Scott Myers

**(Opposite page)** Samantha Myers, Columbia, and her dog Bodhi walk along Katy Trail State Park and the Missouri River near Rocheport in western Boone County.

**(Top)** Katy Trail volunteer Shirley Wilson talks with Mark Culbertson, Springfield, near the Jefferson City Depot during the 2005 Katy Trail Ride.

**(Center)** Bicyclists on the 2005 Katy Trail Ride gather for a group shot at the Clinton depot.

**(Above)** Erica Dickson and Frank Lawson, St. Charles, take a break near the Jefferson City Depot during the 2005 Katy Trail Ride.





Boonville and Sedalia, were settled well before railroads came along, though the new and improved transportation typically spurred prosperity in its path. Other Katy towns sprang up only because of the railroad; they were market centers for the area and railheads for shipping farm products and manufactured goods.

For observant Katy Trail users, in between these 25 trailheads are reminders of even more railroad stops during the glory days of the Katy and of American railroads. Now not much more than a sign, a wide spot in the right of way, and a few houses signify railheads such as Lewis, Beaman, Pleasant Green, Wilton and Peers, which once supplied Katy cars with coal, livestock, grains and hay.

Today, many towns along the Katy route have embraced the trail, as it improves local quality of life and makes good economic sense. Cafes, bicycle and antique shops, campgrounds and bed-and-breakfasts are ideal for attracting trail users. Chambers of commerce and businesses frequently mention the Katy Trail as a selling point for their communities.



Photo by George Denniston

(Above right) Cyclists on the Katy Trail pass the St. Marcus Church near Rhineland, in Montgomery County.

(Below) Katy Trail travelers cross Montgomery County's Loutre River near McKittrick.



Photo by George Denniston

The annual Katy Ride, sponsored by the Department of Natural Resources and held the third week of June, is another magnet for bicycle riders. Three hundred riders usually participate in the five-day event, which goes from one trail end to the other, changing themes and alternating directions year to year. The Katy Ride could not take place – nor could many other trail operations – without the support of Katy Trail volunteers. Each volunteer chooses a home segment of the trail (say, the western section from Clinton to Boonville), and does Katy duty at least four hours per month.

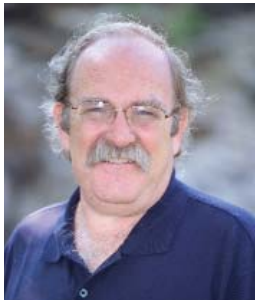
**T**he Department of Natural Resources continues to upgrade the trail piece by piece, trailhead by trailhead. New restrooms, drinking fountains, wayside historical markers, and trailhead “info depots” all make the Katy more user-friendly. The department is also developing the St. Charles-Machens segment to complete the entire 238-mile Katy property.

For more information about Katy Trail State Park or other Missouri state parks and historic sites, contact the Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf). Information can also be found by visiting the Web at [[www.mostateparks.com](http://www.mostateparks.com)].

For information about becoming a Katy Trail State Park volunteer, call the toll-free number. A volunteer application also can be completed online at [[www.mostateparks.com/katytrail/volunteer.htm](http://www.mostateparks.com/katytrail/volunteer.htm)].

*Jeff Durbin is an interpretive resource specialist with the Missouri Department of Natural Resources' Division of State Parks.*





## Career Connection

# A Job You Can Really Dig

*Childhood Passion Drives Archaeologist*

by Jennifer Sieg

photograph by Scott Myers

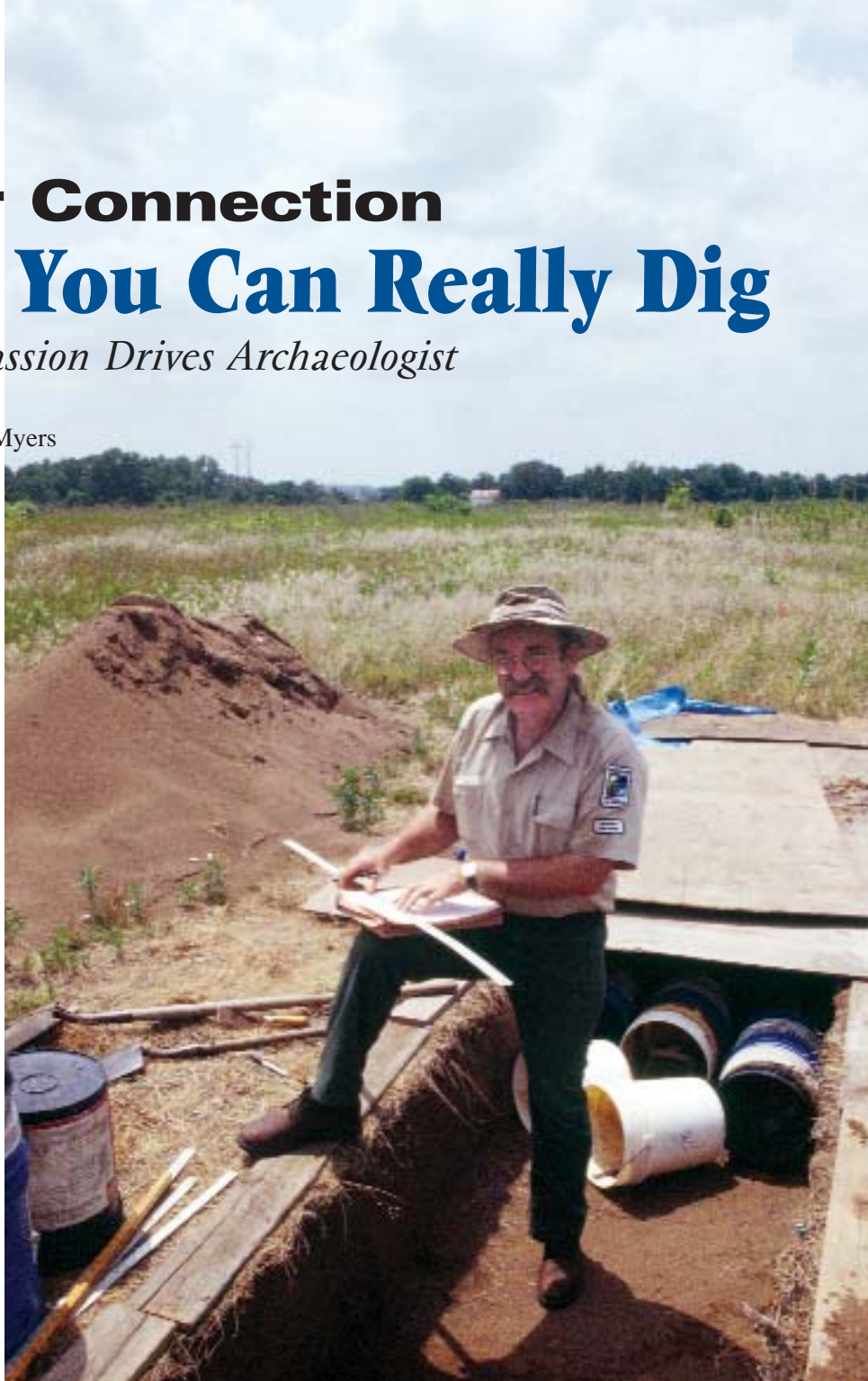
**N**ot many six-year-olds clearly know what they want to be when they grow up. The closest thing to work that they've experienced is doing chores. For Larry Grantham, a common chore led to a life-long passion. When he was six years old, Grantham was hoeing weeds with his father when a projectile point (spear point, dart point or arrowhead) protruded from the ground. From that "point" on, he knew he wanted to be an archaeologist.

Grantham pursued his childhood dream and has been an archaeologist with the Missouri Department of Natural Resources' Division of State Parks for 26 years. His interest and passion for that career choice has never faded.

Archaeology is defined as the scientific study of the life and culture of the past. It verifies what we know about recent history as well as provides new understanding, and has completely changed the way we view prehistoric history. It answers questions. Grantham believes that he has served the citizens of Missouri by answering some of the questions surrounding American Indian and American history. He also has provided insight into the Illinois Indians' way of life, a little of which can still be experienced at various Missouri state historic sites.

"If you like archaeology, this job provides the opportunity to work on the best sites in the Midwest. You'll never get to work on better prehistoric or historic sites," said Grantham. Prehistoric archaeological sites in the state park system range from 13,000-year-old remains at Mastodon State Historic Site to the 650-year-old Indian village site at Towosahgy State Historic Site. Villages of the three major Indian groups in Missouri at the time of European contact – the Osage, Missouri and Illinois – also are part of the park system.

Photo by Sarah Grantham



Excavations also occur on most of the other major state historic sites to answer questions about sizes, shapes and functions of buildings. These excavations tell how structures have changed through time and how people once made their livelihood.

Digging in the dirt is only a minor part of the process to get to these answers. "For every day you spend in the field, you will spend four days writing reports and doing lab work on your findings," said Grantham. Patience is a must for anyone pursuing this

**Missouri state parks archaeologist Larry Grantham plots his digging within an excavation at Illiniwek Village State Historic Site in Clark County. The site, discovered in 1984, was occupied by Illinois Indians from ca. 1640-1683 and was likely visited by French explorers Louis Joliet and Father Jacques Marquette in 1673.**





Photo by Sarah Grantham



DNR photo by Scott Myers

**(Top) Archaeologist Larry Grantham blends historic research with education for two curious onlookers at the Illiniwek Village State Historic Site. (Above) Grantham sorts artifacts from the Illiniwek site. His work includes digging, processing and documenting his discoveries, writing text for exhibits and brochures, preparing contracts for archaeology work and managing cultural resources.**

career, as projects are long-term and often take years to complete.

As an archaeologist for the department's Division of State Parks, Grantham's day-to-day job duties are anything but redundant. In addition to digging, processing his findings and finalizing reports, he writes text for exhibits and brochures, drafts contracts to bid out archaeological work, works on cultural resource management and interpretation plans, and reviews projects for their effect on cultural resources.

To become an archaeologist for the department, you must have a bachelor's degree in archaeology or anthropology and three years of experience as an archaeologist. Two of those years must have involved fieldwork in excavation, laboratory analysis and research. To meet the Secretary of Interior's standards to work with federal projects, the archaeologists in charge must have a master's degree in archaeology or anthropology. For more information on this or other positions, call the department toll free at 1-800-361-4827 and ask for the Human Resources Program.

*Jennifer Sieg is a public information specialist with the department's Division of State Parks.*



# Recognizing Diversity

by Philip J. Tremblay

The mission of the Missouri Department of Natural Resources is “to preserve, protect, restore and enhance Missouri’s natural, cultural and energy resources and to inspire their enjoyment and responsible use for present and future generations.”

It has often been said that people are Missouri’s most valuable resource. From ancient tribes of mound builders to recent immigrants from Russia, Bosnia, Mexico and Middle East nations, people have been attracted to the state’s beautiful, bountiful resources.

People living here today further enrich Missouri’s legacy with their own cultural diversity. The remaining signs of our past are studied by present and future generations.

The department fosters this link to the past. The State Historic Preservation Office, now housed in the new Lewis and Clark State Office Building, works with citizens and groups throughout the state to identify, evaluate and protect Missouri’s diverse range of historic, architectural and archaeological resources. Such sites are where historic events unfolded or where buildings still stand to define Missouri’s unique character. These cultural treasures remind us of

our common heritage as well as our rich diversity.

Since 1988, the department has recognized this diversity in its employees through the efforts of the Multicultural Affairs Committee (MAC). In September 2004, MAC received a Governor’s Award for Quality and Productivity. From the beginning, MAC members have volunteered to enhance the department’s recruitment, retention and promotion goals. Through a variety of activities, including an annual department-sponsored diversity conference, the group has helped remind department staff of the value of individuals and their cultural strengths.

Members of MAC take an active role in the department’s hiring process, development of policies that recognize and encourage cultural di-

versity and they have been instrumental in the formation of the department’s Employee Advisory Council (EAC). The EAC provides an elective process so employee input is presented to the executive levels.

MAC publishes a calendar that highlights historical diversity with quotations, recipes and state events and an annual Women’s History poster that recognizes the accomplishments of Missouri women. Activities include participation in the annual Legislative Black Caucus, International Food Festival in Jefferson City, Latino Expo in Kansas City and the Springfield Multicultural Opportunity Festival.

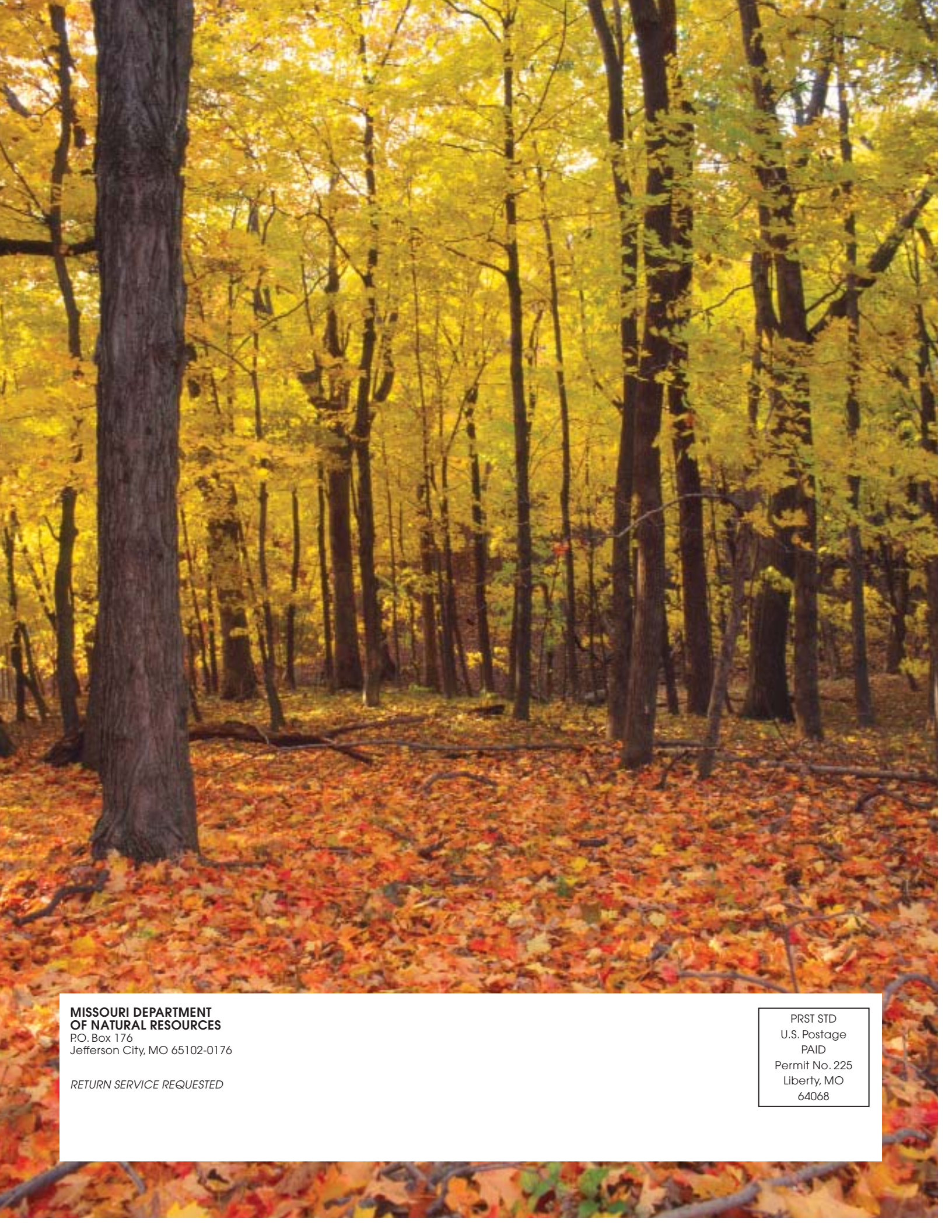
This past spring, nearly 300 people attended the department’s eighth annual MAC Diversity Conference. Attendees represented the department as well as other state agencies, colleges, universities and private citizens. A component of the department’s mission is to take the lead in recognizing the brilliant fabric of cultural activities and traditions that have always been, and are still part of living and working in Missouri.

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*Phil Tremblay is a public information coordinator for the department’s Outreach and Assistance Center, and assistant editor of Missouri Resources.*







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